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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/766,879	01/30/2004	Chikara Manabe	118494	4106
25944	7590	08/23/2006		
OLIFF & BERRIDGE, PLC P.O. BOX 19928 ALEXANDRIA, VA 22320				
			EXAMINER MILLER, DANIEL H	
			ART UNIT 1775	PAPER NUMBER

DATE MAILED: 08/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/766,879	Applicant(s) MANABE ET AL.	
	Examiner Daniel Miller	Art Unit 1775	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 6/9/2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) 10--34 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 and 35 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☒ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-6 are rejected under 35 U.S.C. 102(b) as being anticipated by Fisher et al (US Patent No. 6,203,814).
3. Fisher teaches an embodiment of an invention that includes using carbon fibrils which are defined as graphitic nanotubes "functionalized by the chemical substitution or by adsorption of functional moieties" (Column 1, lines 5-9) and forming a network of carbon fibrils comprising contacting the functionalized fibrils with a cross-linking agent effective for producing a network of carbon fibrils. A preferred cross-linking agent is polyol, polyamine or polycarboxylic acid (Column 7, lines 37-41). Fisher notes that an object of his invention is provide complex structures of fibrils by "linking functional groups on the fibrils with one another by a range of linker chemistries" (Column 4, lines 1-15). Fisher teaches a variety of functionalized nanotubes including nanotubes functionalized with carboxylic acid (oxidation reaction), as illustrated in Example 12 (Column 15) and with a hydroxyl group, as illustrated in Example 8 (Column 13). Fisher

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also discloses a generalized structure (CnHL)-Rm where CnHu represents the carbon nanotube and Rm represents various types of substituents attached to the carbon nanotube. Such substituents can include -COOR' where the R' can be an alkyl, aryl, cycloalkyl, or aralkyl groups (Column 4, lines 25-40). Regarding claims 2 and 3, the Fisher teaches the oxidized are more easily dispersed in an aqueous medium and therefore more useful in electrical applications such as electrodes (column 21-22). The further process limitations of the claims are not indicative of the patentability of the product and therefore no patentable distinction is seen.

4. Therefore, there is anticipation of claims 1-6.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-6, 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stupp et al (U.S. 6,890,654B2) in view of Fisher.

7. Regarding claim 1, Stupp teaches carbon nanotubes used as coated wires (column 11 line 17-23). The carbon nanotubes have an aggregation of amphiphiles around them (column 9 line 1-3). The amphiphiles (functional groups) include moieties

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that allow for cross-linking with each (column 9 line 15-20). The cross-linked amphiphiles surrounding the carbon nanotubes can be used to form stable structures (mesh) between adjacent molecules (column 7 line 27-32, 42-45). Regarding claim 2, the cross linking is taking place in a liquid solution containing a plurality of carbon nanotubes (column 2 line 62-68, column 3 line 1-10, column 10 line 55-60). The amphiphiles form cross-linking sites (column 9 line 25-30). Regarding claim 3, the molecule is oxidized which would inherently require a linking agent, which would inherently be in liquid solution as are the nanotubes and amphiphiles. The linking agent would be non-self polymerizable otherwise it would inhibit the intended reaction. Regarding claim 5, the cross-linking site is formed from dithiol bonds (column 9 line 33-35). Regarding claim 6, the reaction is an oxidative reaction. Regarding claim 7, the cross-linking dithiol bonds (-S-S-) (column 9 line 33-35). Regarding claim 8, the carbon nanotubes can be MWCNT's (column 5 line 45-49). Regarding claim 9, the core wire has a coating (column 11 line 21-24).

8. Regarding claim 4, the reference is silent as to the presence of the functional groups recited by applicant however Stupp discuss the possibility of additional functionalization of the molecule (column 11 line 30-40).

9. The cross-linking described by applicant are commonly known in the art carboxylic acid and hydroxyl groups cross-linkings, as taught by Fisher (see above), (further see column 5 line 60-68, column 6 line 1-6 Stupp).

10. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have used the cross-linking structures taught by Fisher in the

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wire of Stupp because Stupp teaches the possible use of additional functionalization of the molecule other than those disclosed and Fisher teaches the oxidized are more easily dispersed in an aqueous medium and therefore more useful in electrical applications (column 21-22 '814).

11. Claims 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fisher in view of Stupp et al (U.S. 6,890,654B2).

12. Fisher, discussed above, is silent as to the carbon nanotubes being single or double walled or comprising a coating.

13. Stupp, discussed above, teaches regarding claim 8, the carbon nanotubes can be MWCNT's (column 5 line 45-49). Regarding claim 9, the core wire has a coating (column 11 line 21-24).

14. It would have been obvious to one of ordinary skill in the art at the time of the invention to have used the cross-linking structures taught by Fisher in the wire of Stupp because Stupp teaches the possible use of additional functionalization of the molecule other than those disclosed and Fisher teaches the oxidized are more easily dispersed in an aqueous medium and therefore more useful in electrical applications (column 21-22 '814).

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15. Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stupp et al (U.S. 6,890,654B2) in view Fisher (or Fisher in view of Stupp) and further in view of Lobovsky et al (U.S. 6,682,677).

16. Regarding claim 35, Stupp and Fisher, discussed above, is silent as to the nanotubes being used as an electromagnet.

17. Lobovsky teaches a carbon nanotube ribbon or yarn that is used to create a winding for an electromagnet (column 15 line 46-60). The nanotubes are suited to this purpose because of their electrical conductivity and high thermal stability.

18. It would be obvious to use the nanotubes of Stupp as a winding for an electromagnet, as in Lobovsky, because of their electrical conductivity and high thermal stability.

Response to Arguments

19. Applicant's arguments with respect to all pending claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel Miller whose telephone number is (571)272-1534. The examiner can normally be reached on M-F.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer McNeil can be reached on (571)272-1540. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Daniel Miller



JENNIFER C. MCNEIL
SUPERVISORY PATENT EXAMINER

8/20/06